HP ProLiant DL320 Firewall/VPN/Cache Server User Guide

Running Microsoft® Internet Security and Acceleration Server 2004

June 2005 (Third Edition)
Part Number 341672-003

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Contents

Introduction

HP ProLiant DL320 Firewall/VPN/Cache server running Microsoft® Internet Security and Acceleration (ISA) Server 2004 Service Pack 1 is an advanced application layer firewall, virtual private network (VPN), and Web cache solution that enables existing IT investments to be maximized by improving network security and performance. The ProLiant DL320 Firewall/VPN/Cache server is preinstalled and hardened to provide secure connections to the Internet and enable a similar level of security for remote access connections to resources on the protected network.

This guide focuses on important issues that should be considered before and after installing the ProLiant DL320 Firewall/VPN/Cache server in the network. However, this user guide is not a comprehensive guide to configuring all of the firewall features of ProLiant DL320 Firewall/VPN/Cache server. In-depth coverage of the ProLiant DL320 Firewall/VPN/Cache server and Web caching configuration is included in the Help file, included with the product, on the Microsoft ISA server 2004 website at http://go.microsoft.com/fwlink/?LinkID=27332, and on the ProLiant DL320 Firewall/VPN/Cache server website at http://www.hp.com/servers/DL320FW-VPN-Cache.

This guide contains basic information about network configuration and setup. An experienced firewall or network administrator will already be familiar with most of the concepts and procedures in this guide. However, HP recommends a review of the subjects covered in this guide because some of the subjects might be new or of specific interest.

Initial Setup Considerations

Before beginning the ProLiant DL320 Firewall/VPN/Cache server setup, consider the following subjects so that the ProLiant DL320 Firewall/VPN/Cache server can provide the best level of security and accessibility.

Firewall Lockdown Mode

The ProLiant DL320 Firewall/VPN/Cache server is defending itself right out of the box by applying the Firewall Lockdown Mode. You can set up the ProLiant DL320 Firewall/VPN/Cache server while it is connected to the internal network and to the Internet because the Firewall Lockdown Mode is active.

A critical function of a firewall is to react to an attack. When an attack occurs, it might seem that the first line of defense is to disconnect from the Internet, isolating the compromised network from malicious outsiders. However, HP does not recommend this approach. Although the attack must be handled, normal network connectivity must be resumed as quickly as possible, and the source of the attack must be identified.

The lockdown feature introduced with ISA Server 2004 combines the need for isolation with the need to stay connected. Whenever the Microsoft firewall service is down, the ISA Server enters the lockdown mode, which occurs when:

- The server is starting up and the firewall service has not yet started.
- An event triggers the firewall service to shut down. When configuring alert definitions, configure the firewall service by determining which events will cause the firewall service to shut down.
- The firewall service is manually shut down. If a malicious attack occurs while configuring the ISA Server computer, shut down the firewall service, and the network can handle the attack.

Affected Functionality

When in lockdown mode, the following functionality applies:

- The Firewall Packet Filter Engine (fweng) applies the firewall policy.
- The following system policy rules are still applicable:
  - Allow Internet Control Message Protocol (ICMP) from trusted servers to the local host.
  - Allow remote management of the firewall using Microsoft Management Console (MMC) (RPC through port 3847).
  - Allow remote management of the firewall using Remote Data Protocol.
- Outgoing traffic from the local host network to all networks is allowed. If an outgoing connection is established, that connection can be used to respond to incoming traffic. For example, a Domain Name System (DNS) query can receive a DNS response on the same connection.
- No incoming traffic is allowed unless a system policy rule (listed previously) that specifically allows the traffic is enabled. The one exception is DHCP traffic, which is always allowed. That is, the UDP Send protocol on port 68 is allowed from all networks to the local host network. The corresponding UDP Receive protocol on port 67 is allowed.
- VPN remote access clients cannot access ISA Server. Similarly, access is denied to remote site networks in site-to-site VPN scenarios.
- Any changes to the network configuration while in lockdown mode are applied only after the firewall service restarts and ISA Server exits lockdown mode. For example, if you physically move a network segment and reconfigure ISA Server to match the physical changes, the new topology is in effect only after ISA Server exits lockdown mode.
- ISA Server does not trigger any alerts.

Leaving Lockdown Mode

When the firewall service restarts, ISA Server exits lockdown mode and continues functioning as it did previously. Any changes made to the ISA Server configuration are applied after ISA Server exits lockdown mode.

Internal Network Overview

The internal network consists of addresses on the protected network that are not associated with a perimeter or external network interface. Addresses on the LAN are typically part of the internal network. The ProLiant DL320 Firewall/VPN/Cache server installation process depends on the correct configuration of the internal network adapter so that ProLiant DL320 Firewall/VPN/Cache server system policy is applied correctly. Network infrastructure services, such as Active Directory service domain controllers, internal DNS servers, DHCP servers, Microsoft Windows® Internet Name Service (WINS) servers, Terminal Services, ICMP, Common Internet File System (CIFS), and others depend on the correct configuration of the internal network.

Incorrect configuration of the internal network addresses could lead to a compromise of the ProLiant DL320 Firewall/VPN/Cache server.

The internal network consists of a collection of addresses representing a portion of a network ID, an entire network ID, or several network IDs. The internal network can represent all addresses accessible from one or more network adapters.

Computer Name and Administrator Password

Select a computer name for the ProLiant DL320 Firewall/VPN/Cache server. The ProLiant DL320 Firewall/VPN/Cache server name must be different from any other computer on the network. No two computers on the network can have the same name. The computer name must be 15 characters or less in length and include only letters, numbers, and non-alphanumeric characters (spaces are not allowed). Refer to the computer name database if the ProLiant DL320 Firewall/VPN/Cache server is installed on a larger network.

The administrator account has complete access to all components of the ProLiant DL320 Firewall/VPN/Cache server. Any person connecting to the ProLiant DL320 Firewall/VPN/Cache server with the administrator account can take control of the firewall and attack the network. Use a complex and difficult-to-guess password for the administrator account to help prevent attackers from easily guessing the password.

Record the administrator password used for the ProLiant DL320 Firewall/VPN/Cache server, and memorize this password. Store this paper in a protected location after the ProLiant DL320 Firewall/VPN/Cache server installation is completed.

NOTE: If the ProLiant DL320 Firewall/VPN/Cache server will join a domain, be sure to comply with existing domain-wide password policy.

Workgroup and Domain Name Considerations

The ProLiant DL320 Firewall/VPN/Cache server can be joined to a workgroup, a Microsoft Windows Server 2003 domain, a Microsoft Windows 2000 Active Directory domain, or a Microsoft Windows NT® 4.0 domain. Add the ProLiant DL320 Firewall/VPN/Cache server to the Windows domain if a Windows Server 2003, Windows 2000 Active Directory, or Windows NT 4.0 domain already exists on your network.

An advantage of joining the ProLiant DL320 Firewall/VPN/Cache server to your domain includes the ability to assign permissions for Internet access on a domain user or group basis and centralized management of the firewall computer through Group Policy.

A disadvantage of joining the ProLiant DL320 Firewall/VPN/Cache server to the domain is that many firewall experts believe that joining the ProLiant DL320 Firewall/VPN/Cache server to the domain might reduce the overall level of protection that the firewall can provide to the network.

Join the ProLiant DL320 Firewall/VPN/Cache server to a Windows workgroup if there is not a Windows domain or if there is no need to join the ProLiant DL320 Firewall/VPN/Cache server to an already existing domain.

NOTE: When joining the ProLiant DL320 Firewall/VPN/Cache server to a Windows domain, the domain Group Policy can be applied to the firewall computer, possibly changing the level of security on the server. The server can be added to a workgroup and later added to a Windows domain after developing a better understanding of how Group Policy can potentially change the security configuration of the firewall.

1. Decide whether to join the ProLiant DL320 Firewall/VPN/Cache server to the Windows domain before installing the ProLiant DL320 Firewall/VPN/Cache server onto the network.
2. Record the name of your domain and the user name and password of a user that has permissions to add a computer to the domain.
3. If a Windows domain does not exist or if there is no need to join the ProLiant DL320 Firewall/VPN/Cache server to the Windows domain, record the name of the workgroup already in use on your LAN.

4. If a workgroup name is not already established for your LAN, use the workgroup name, WORKGROUP.

If the ProLiant DL320 Firewall/VPN/Cache server was not added to a Windows domain during initial setup, complete the following procedure to add the server to a domain anytime after the initial setup process is complete.

1. Select **Start>Control Panel>System.**
2. In the System Properties dialog box, click the **Computer Name** tab.
3. On the Computer Name tab, click **Change.**
4. In the Computer Name Changes dialog box, select **Domain.**
5. In the Domain text box, enter the name of the Windows domain to join, and click **OK.**
6. In the Computer Name Changes Authentication dialog box, enter the name and password of a user with permission to add computers to the domain, and click **OK.**
7. In the Computer Name Changes dialog box welcoming you to the domain, click **OK.**
8. In the Computer Name Changes dialog box informing that you must restart the computer for the changes to take effect, click **OK.**
9. In the System Properties dialog box, click **OK.**
10. In the System Settings Change dialog box prompting you to restart your computer now, click **Yes.**

The ProLiant DL320 Firewall/VPN/Cache server is now a member of the internal network Active Directory domain and can access user accounts contained in the Active Directory or Windows NT 4.0 domain and domains trusted by that domain.

The ProLiant DL320 Firewall/VPN/Cache Server Internal IP Address

The IP address assigned to the internal interface of the ProLiant DL320 Firewall/VPN/Cache server must be a valid IP address for the network to which the firewall is directly connected. This address must meet the following requirements:

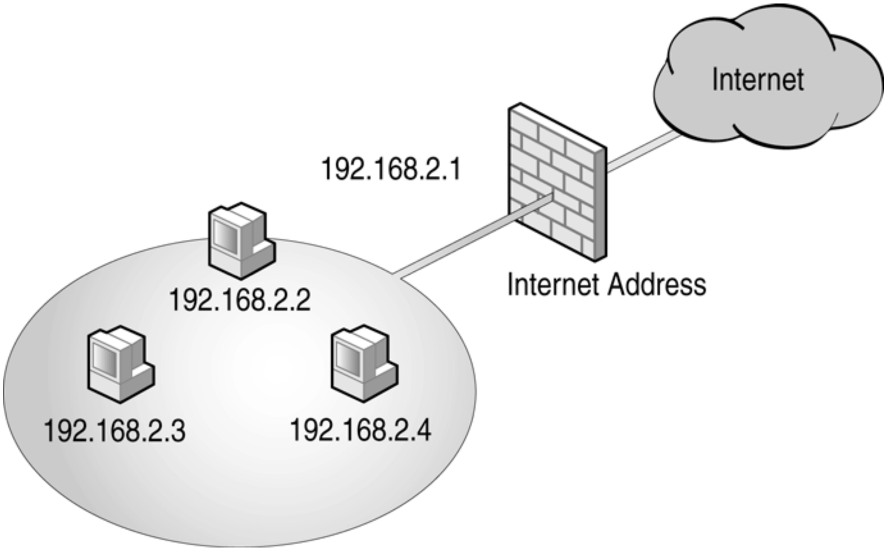
- The internal IP address must be on the same network ID as other computers connected to the same network segment.
- The internal IP address must not already be in use on the network.
- The internal IP address, in most cases, is statically assigned. Do not use DHCP to assign an address to the internal interface unless you have a specific requirement to do so. This configuration helps prevent name resolution issues for the firewall and Web proxy clients.
- Examples of network IDs commonly used on LANs include:
  - 192.168.1.0 with a subnet mask of 255.255.255.0
  - 10.1.0.0 with a subnet mask of 255.255.0.0
  - 172.16.0.0 with a subnet mask of 255.255.0

NOTE: The ProLiant DL320 Firewall/VPN/Cache server uses a default internal IP address of 192.168.2.1. Change this during setup to meet the unique addressing requirements of the network.

For example, consider the network depicted in the following figure. All of the computers on the network have the same subnet mask, which is 255.255.255.0. The three computers on the LAN have the IP addresses:

- 192.168.2.2
- 192.168.2.3
- 192.168.2.4

The internal interface must be placed in the same network as these computers. In this example, this configuration is accomplished by assigning the internal interface the IP address of 192.168.2.1. The external interface of the ProLiant DL320 Firewall/VPN/Cache server is assigned an Internet IP address that is determined by your Internet service provider (ISP).



NOTE: IP addressing can be a complex issue. If you do not understand how the IP addresses were assigned to computers on your LAN, consult with a networking professional who can assist you with network IP addressing issues.

1. Before installing the ProLiant DL320 Firewall/VPN/Cache server, determine the network ID used on the network directly connected to the internal interface.
2. Assign the internal interface of the ProLiant DL320 Firewall/VPN/Cache server an IP address on the same network ID as the other computers on the directly connected network of the internal interface.

   If you are not sure what IP address to assign to the internal interface of the ProLiant DL320 Firewall/VPN/Cache server, consult with a network professional who can help with IP address issues.

DNS Server Address on the Internal Interface

The ProLiant DL320 Firewall/VPN/Cache server must resolve names to IP addresses. For example, each time the Web browser is used to connect to a website on the Internet, such as http://www.microsoft.com, that name is sent to a DNS server to match (or resolve) that name to the IP address of the website. After the Web browser has the IP address of the website, it connects to the website using the IP address.

The ProLiant DL320 Firewall/VPN/Cache server must be configured to use a DNS server that resolves Internet computer names to IP addresses. There are several ways to do this:

- Install a DNS server on the LAN, configure that DNS server to resolve Internet host names, and configure the ProLiant DL320 Firewall/VPN/Cache server to use that DNS server.
- Use the IP address of your ISP DNS server. The DNS server at your ISP will be able to resolve Internet computer names, but it will not be able to resolve computer names on your LAN.
- Install and configure a DNS server on the ProLiant DL320 Firewall/VPN/Cache server. This DNS server would be able to resolve both Internet computer names and computer names on your LAN.

NOTE: Any network services and client applications installed on the firewall can potentially increase the security risk.

If you are familiar with the installation and configuration of DNS servers or if a DNS server already exists on the LAN, the best option is to configure that DNS server to resolve Internet host names and then create an access rule on the firewall enabling that DNS server to use the DNS protocol to connect to the Internet.

If you are not familiar with DNS server installation and configuration, or if you choose not to install and configure a DNS server, use the ISP DNS server. The main limitation of this option is that the ISP DNS server cannot resolve names of computers on the LAN.

1. Determine if a DNS server already exists on the LAN.
2. If a DNS server exists on the LAN, configure that DNS server to resolve Internet host names, and then create a firewall rule allowing this DNS server access to the DNS protocol to all sites on the Internet.
3. If a DNS server does not exist on the LAN, install a DNS server on the ProLiant DL320 Firewall/VPN/Cache server. For details on DNS setup and configuration, refer to the Windows Server 2003 or Windows 2000 Help and Support Center.
4. If a DNS server does exist on the LAN and you do not want to install a DNS server on the ProLiant DL320 Firewall/VPN/Cache server, configure the internal interface to use the IP address of your ISP DNS server. Consult the ISP to determine the correct IP address of their DNS server.

Custom Network Adapter Configurations

The ProLiant DL320 Firewall/VPN/Cache server might be equipped with additional network interfaces. In addition to the internal and external interfaces, there might be additional LAN, partner access, perimeter network (also known as a demilitarized zone or DMZ), and screened subnet interfaces.

Additional network interfaces can provide the following benefits:

- Additional LAN interfaces can connect several internal networks to the firewall. The ProLiant DL320 Firewall/VPN/Cache server can control what network traffic moves among the LANs and between the LANs and the Internet.
- Perimeter network interfaces can be used to connect perimeter networks hosting publicly accessible servers and services. For example, you might want to host your own e-mail or Web servers on the perimeter network.
- Partner networks enable business partners to connect to resources on a network segment outside of the LAN and perimeter networks. These networks are not public networks because only the partners can connect to them. Partner networks are sometimes referred to as extranets.

IP addresses assigned to additional LAN, perimeter network, and extranet interfaces are specific to the requirements of your unique network configuration. The only requirement from the standpoint of the ProLiant DL320 Firewall/VPN/Cache server is that each of these interfaces is configured with IP addresses on different network IDs. The setup wizard enables the configuration of up to three interfaces. Additional interfaces must be configured after setup is completed.

1. Before installing the ProLiant DL320 Firewall/VPN/Cache server, determine and record what IP addresses and subnet masks should be configured on the additional perimeter network or extranet interfaces.
2. If you are configuring a perimeter network, additional LAN networks, or an extranet but do not know what IP addresses to assign the ProLiant DL320 Firewall/VPN/Cache server interfaces, consult with a network professional who can help you determine the correct configuration.

Configuring the External IP Address

The ISP determines the IP address of the external interface of the ProLiant DL320 Firewall/VPN/Cache server. The address can be a statically assigned IP address or a dynamically assigned IP address. Statically assigned IP addresses do not change over time. Dynamically assigned IP addresses change over the course of hours, days, or weeks. How frequently the address changes is determined by your ISP.

The type of address used is based on how much is spent on the Internet connection and the level of service required. If you are using the ProLiant DL320 Firewall/VPN/Cache server only for connecting the network computers to the Internet, a dynamically-assigned address fulfills that requirement. However, if you are publishing servers on the internal network to the Internet or taking advantage of the ProLiant DL320 Firewall/VPN/Cache server VPN server features, having a permanent IP address on the firewall external interface is a benefit.

A valid IP address must be assigned to the external interface of the ProLiant DL320 Firewall/VPN/Cache server before connecting to the Internet. Assign either a static or dynamic address to the external interface.

1. Determine if a statically or dynamically assigned external IP address exists before installing your ProLiant DL320 Firewall/VPN/Cache server.
2. If a statically assigned IP address exists, record it for future reference.
3. If a dynamically assigned IP address exists, configure the external interface to automatically obtain an IP address.

Setting Up the ProLiant DL320 Firewall/VPN/Cache Server

Several basic configuration tasks should be completed after the ProLiant DL320 Firewall/VPN/Cache server is installed. These include:

- Enabling the Web listener
- Enabling the firewall client listener
- Creating an Internet access rule

Enabling the Web Listener

A Web listener is software that accepts connections from Web browsers on the LAN configured to use the ProLiant DL320 Firewall/VPN/Cache server as a Web Proxy server. The Web browser sends requests to connect to the Internet directly to the IP address on the ProLiant DL320 Firewall/VPN/Cache server listening for outbound Web requests. Some advantages of configuring the Web browser to use the ProLiant DL320 Firewall/VPN/Cache server as a Web Proxy include:

- The client computer connecting to the ProLiant DL320 Firewall/VPN/Cache server does not rely on its default gateway configuration to connect to the Web. The client computer must only know the route to the internal IP address of the ProLiant DL320 Firewall/VPN/Cache server.
- Non-Microsoft operating systems can authenticate with the ProLiant DL320 Firewall/VPN/Cache server.
- You can use Remote Authentication Dial-In User Service (RADIUS) to authenticate Web browsers connecting through the Web Proxy. Microsoft implements RADIUS as part of its Internet Authentication Service (IAS) servers, which is a service available on Windows Server 2003 and Windows 2000 Server family products.
- You can configure:
    - — A connection time-out for Web browsers connected to the ProLiant DL320 Firewall/VPN/Cache server
    - — A limit on the number of simultaneous connections

To enable and configure the Web Proxy listener:

1. In the scope pane of the ISA Server 2004 management console, expand your server name, expand the Configuration node, and then click the **Networks** node.
2. In the details pane on the Networks page, click the **Networks** tab. In the list of networks, right-click the internal network, and click **Properties.**
3. In the Internal Properties dialog box, click the **Web Proxy** tab.
4. On the Web Proxy tab, select the **Enable Web Proxy clients** checkbox. Select the **Enable HTTP** checkbox, and verify that the default port number in the HTTP port text box is **8080.**
5. Click the **Authentication** button.
6. In the Authentication dialog box, verify that the **Integrated** checkbox is selected. Select the **Basic** checkbox. Click **Yes** in the ISA Server Configuration dialog box warning you that passwords are transmitted in clear text when sent by means of Basic authentication. Clear text communications can be captured and read by network analyzers because they are not encrypted. However, all browsers support Basic authentication.
7. In the Authentication dialog box, click **OK.**
8. In the Internal Properties dialog box, click **Apply>OK.**
9. Click **Apply** at the top of the details pane to save the changes and update the firewall policy.

Enabling the Firewall Client Listener

The firewall client is an optional client-side software component that can be installed to enhance the level of security and accessibility for those host systems. The firewall client software can be installed on all 32-bit Windows operating systems. The firewall client software provides the following benefits:

- User credentials are transparently sent to the ProLiant DL320 Firewall/VPN/Cache server, which enables user-level authentication for access control.
- All Winsock applications are supported, including those requiring complex protocols (such as FTP, games, and voice or video applications).
- The firewall client computer is independent of the default gateway configuration because it forwards Internet connection requests directly to the internal IP address of the ProLiant DL320 Firewall/VPN/Cache server.

The firewall client software is optional. However, enabling the firewall client listener allows the ProLiant DL320 Firewall/VPN/Cache server to accept incoming connection requests from firewall clients.

To enable the firewall client listener on the ProLiant DL320 Firewall/VPN/Cache server:

1. In the scope pane of the ISA Server console, expand the server name, expand the **Configuration** node, and click the **Networks** node.
2. In the details pane, click the **Networks** tab.
3. In the list of networks, right-click the internal network, and click **Properties.**
4. In the Internal Properties dialog box, click the **Firewall Client** tab.
5. On the Firewall Client tab, select the **Enable Firewall client support for this network** checkbox. Do not change the ISA Server name or IP address default settings. Change this setting later, depending on whether a DNS server is on the LAN.
6. Click **Apply,** and then click **OK** in the Internal Properties dialog box.
7. Click **Apply** at the top of the details pane to save the changes and update the firewall policy.

Creating an Internet Access Rule

After installing the ProLiant DL320 Firewall/VPN/Cache server, all traffic from internal network clients to the Internet is blocked. This default configuration provides a high level of security and prevents both internal and external users from accessing content through the ProLiant DL320 Firewall/VPN/Cache server.

Connect to the Internet through the ProLiant DL320 Firewall/VPN/Cache server immediately after it is installed. The simplest client configuration is the Secure NAT client. To connect internal network clients to the Internet as quickly as possible but still remain secure from external threats, confirm the following:

- The default gateway setting on the LAN computers is set to the IP address of the internal interface of the ProLiant DL320 Firewall/VPN/Cache server.
- The LAN computers are configured with a DNS server address that can resolve Internet host names. If there is not a DNS server on your LAN capable of resolving Internet host names, configure the LAN computers to use the IP address of your ISP DNS server. For more details, refer to the DNS discussion later in this document.
- A firewall rule exists, allowing access to the required Internet protocols.

The default gateway address and the DNS server address used by the computer on the LAN can be changed in the Control Panel. Create an access rule on the ProLiant DL320 Firewall/VPN/Cache server. The access rule can be configured to allow a limited number of protocols outbound access to the Internet, allow a selected group of users access to a selected group of websites, or create a firewall rule allowing all the users on your LAN access to all sites at all times using virtually any protocol.

The following example demonstrates how to create a firewall rule that allows everyone access to all protocols to all sites at all times. To create the firewall rule:

1. In the scope pane of the ISA Server management console, expand the computer name, right-click the **Firewall Policy** node, and select **New>Access Rule.**
2. On the Welcome to the New Access Rule Wizard page, enter the name of the rule in the Access rule name text box. In this example, enter `All IP Traffic Outbound from Internal`, and click **Next.**
3. On the Rule Action page, select the **Allow** option, and click **Next.**
4. On the Protocols page, select the **All outbound protocols** option, and click **Next.**
5. On the Access Rule Sources page, click the **Add** button.
6. In the Add Network Entities dialog box, select the **Networks** folder.
7. Double-click the internal network, and then click **Close.** The internal network should appear in the This rule applies to traffic from these sources list.
8. Click **Next.**
9. On the Access Rule Destinations page, click the **Add** button.
10. In the Add Network Entities dialog box, select the **Networks** folder.
11. Double-click the external network, and then click **Close.** The external network should appear in the This rule applies to traffic sent to these destinations list.
12. Click **Next.**
13. On the User Sets page, confirm that **All Users** appears in the This rule applies to requests from the following user sets, and click **Next.**
14. On the Completing the New Access Rule Wizard page, click **Finish.**
15. Click **Apply** at the top of the scope pane to save the changes and update the firewall policy.

The Internet is now accessible from computers on the LAN. Consider strengthening security for outbound connections after confirming that the ProLiant DL320 Firewall/VPN/Cache server is successfully allowing access to the Internet. An effective method for creating a secure access policy is to use the network templates included with ISA Server 2004. For detailed information about the network templates, refer to the ISA Server 2004 Help file.

HP Virus Throttle

HP Virus Throttle, a network packet-filtering feature that helps slow the spread of viruses, is automatically installed and enabled on your ProLiant DL320 Firewall/VPN/Cache server. Virus Throttle monitors all outbound connection requests and counts the number of unique connections. It detects abnormal ("virus-like") behavior in the requests and slows excessive connection requests to new hosts until you can determine if they are viral in nature and take action.

Configuring Virus Throttle

After Virus Throttle is installed, the Virus Throttle icon appears in the Windows toolbar at the bottom of the screen. The parameters for the filter driver are set to the defaults. Any change made to the Virus Throttle filter driver parameters is made to all active instances of the Virus Throttle filter driver.

To configure parameters for the Virus Throttle filter driver:

1. Double-click the **Virus Throttle** icon to open the HP Virus Throttle Status and Configuration Utility. If no inconsistencies are detected in the filter driver parameters, the Status tab is displayed. The Status Tab shows overall status, statistics, and delay queue information. If inconsistencies are detected, a warning message displays. Click **OK.**
2. Click the **Configuration** tab. The following parameters can be modified:
   - **Delay Queue Size**—Controls the maximum number of delayed connection requests in the queue for each instance of the filter driver. Requests over the queue size are dropped. The default is 200 delayed connection requests. The valid range is 1through 1000.
   - **Delay Queue High Water Mark**—Controls the number of connection requests in the delay queue at which virus-like activity is considered to be occurring for each instance of the filter driver. The default is 160 connection requests. The valid range is 1 through Delay Queue Size.
   - **Delay Queue Low Water Mark**—Controls the number of connection requests in the delay queue below which virus-like activity is considered to be stopped. The default is 100 connection requests. The valid range is 1 through High Water Mark.

- **Delay Period**—Controls the rate at which connection requests are removed from the delay queue and passed down the protocol network stack. The default is 1 second. The valid range is 1 through 10 seconds.
- **Host Working Set Size**—Controls the number of known machines to which connections are established without delay. When a new connection is made, the oldest member of the working set is replaced with the new host. The default is 5 hosts. The valid range is 1 through 100.

3. Configure the Virus Throttle parameters as necessary, and click **OK**.
4. Click **Yes>OK** when prompted.

NOTE: If a non-virus program exhibits virus-like behavior, it might be necessary to reconfigure the Virus Throttle configuration parameters to prevent unnecessary inconsistencies from being reported.

For information about using Virus Throttle, refer to the *HP ProLiant Essentials Intelligent Networking Pack User Guide* at http://h18004.www1.hp.com/products/servers/proliantessentials/inp/index.html.

Available Verified Third-Party Applications and Plug-Ins

The ProLiant DL320 Firewall/VPN/Cache server functionality can be further enhanced with ISA Server 2004 verified third-party applications and plug-ins. A list of verified third-party applications and plug-ins, ranging from URL and content filtering to antivirus and high availability, can be found at http://www.microsoft.com/isaserver/partners.

Suggested Third-Party Applications

Installing and running third-party e-mail, spam, URL, and Web content filtering applications is suggested. The following HP preferred partners offer technologically advanced e-mail and spam or URL and Web content filtering products specifically for ISA Server 2004.

Vircom ModusGate—An award-winning comprehensive e-mail security and authentication solution, ModusGate seamlessly integrates with ISA Server 2004 to provide comprehensive e-mail anti-spam, anti-virus and attachment filtering, as well as sender authentication, e-mail caching and policy management of inbound and outbound email. To purchase, learn more, and take advantage of a 30-day free trial offer and other special offers, refer to http://www.vircom.com/HPspecialoffer.

Additional Documentation Available from HP

Additional documentation taking full advantage of the various deployment scenarios can be beneficial. The following are examples of a few of the white papers and deployment kits available:

- VPN Deployment Kit—A step-by-step guide for a VPN deployment
- Exchange Deployment Kit—A step-by-step guide for an Exchange deployment
- Windows Hardening white paper—A document discussing Windows Server operating system hardening and hardening options
- Caching white paper—A document discussing how to successfully optimize the ProLiant DL320 for Web caching

These and other white papers and deployment kits are available for download at http://www.hp.com/servers/DL320FW-VPN-Cache.

Managing and Maintaining the Firewall

The ProLiant DL320 Firewall/VPN/Cache server, like any other network device, must be managed and maintained. Common management and maintenance tasks include:

- Using Windows Update to keep the software updated
- Using Remote Desktop to manage the ProLiant DL320 Firewall/VPN/Cache server from computers on the LAN and from computers located on the Internet
- Using Remote Management Console to manage the ProLiant DL320 Firewall/VPN/Cache server from a management station on the LAN
- Using Remote Assistance to obtain help with ProLiant DL320 Firewall/VPN/Cache server troubleshooting
- Configuring ProLiant DL320 Firewall/VPN/Cache server logs and monitoring
- Setting up Client Installation Share to allow firewall client software to be installed on network client systems
- Creating a Web Proxy Automatic Discovery (WPAD) entry to support Web browser and firewall client automatic configuration
- Configuring Time Synchronization to use the ProLiant DL320 Firewall/VPN/Cache server as a time server for the LAN
- Using a Remote Access VPN for remote management and network connectivity

Windows Update

Use the Microsoft Windows Update website to update the operating system with the latest service packs and hot fixes. The process can be configured to download system updates and install them automatically, or it can be configured to wait for ProLiant DL320 Firewall/VPN/Cache server administrator approval. Configure the Automatic Updates tab with one of the following options:

- Notify me before downloading any updates, and notify me again before installing them on my computer.
- Download the updates automatically, and notify me when they are ready to be installed.
- Automatically download the updates, and install them on the schedule that I specify.

To configure the automatic update feature of the ProLiant DL320 Firewall/VPN/Cache server:

1. Select **Start>Control Panel>System.**
2. In the System Properties dialog box, click the **Automatic Updates** tab.
3. On the Automatic Updates tab, select the **Keep my computer up to date** checkbox.
4. Select one of the options in the **Settings** frame that best meets your requirements.

Remote Desktop

The ProLiant DL320 Firewall/VPN/Cache server is preconfigured to allow a single concurrent Remote Desktop Connection to the server. Use this connection to perform remote management. The Remote Desktop Protocol (RDP) is used to connect to the ProLiant DL320 Firewall/VPN/Cache server Remote Desktop, where it can be accessed by the ISA Server 2004 management console to manage the firewall.

The ProLiant DL320 Firewall/VPN/Cache server is accessible through an internal network computer or a computer located anywhere on the Internet by adjusting a system policy rule.

To enable external users access to the Remote Desktop Service on the ProLiant DL320 Firewall/VPN/Cache server:

1. In the scope pane of the ISA Server 2004 management console, expand the server name, right-click the **Firewall Policy** node, and then click **Edit System Policy.**
2. In the System Policy Editor dialog box, locate the **Remote Management** group, and then click the **Terminal Server** entry.
3. On the General tab, confirm that the **Enable** checkbox is selected.
4. Click the **From** tab, and click the **Add** button to the right of the **This rule applies to traffic from these sources** list.
5. In the Add Network Entities dialog box, click the **Networks** folder, double-click **External,** and then click **Close.**
6. In the System Policy Editor dialog box, click **OK.**
7. Click **Apply** to save the changes and update firewall policy.

External computers will now be able to connect to the RDP service on the ProLiant DL320 Firewall/VPN/Cache server.

Remote ProLiant DL320 Firewall/VPN/Cache Server Management Console

Manage the ProLiant DL320 Firewall/VPN/Cache server from a management station on the LAN by installing the ISA Server 2004 management console on the management station. The ISA Server 2004 management console can manage virtually any aspect of the ProLiant DL320 Firewall/VPN/Cache server configuration.

The ProLiant DL320 Firewall/VPN/Cache server management console can be installed by placing the Companion CD into the CD-ROM drive of the management station, and then selecting the option to install the management console from the Autorun page. The management station will be able to connect to the ProLiant DL320 Firewall/VPN/Cache server because there is a system policy rule in place that allows internal network hosts to connect using the ProLiant DL320 Firewall/VPN/Cache server management console.

Remote Assistance

The Remote Assistance feature enables you to request assistance from a ProLiant DL320 Firewall/VPN/Cache server technician who can interactively help troubleshoot and repair problems with the firewall. Remote Assistance enables the technician to view the desktop interface of the firewall and, with your permission, take control of the desktop to correct the problem.

To request assistance using the Remote Assistance feature:

1. Select **Start>Help and Support.**
2. In the list of Support Tasks, click **Remote Assistance.**
3. On the Remote Assistance page, click **Invite someone to help you.**
4. On the Remote Assistance page, click **Save invitation as a file (Advanced)** at the bottom of the page.
5. On the Remote Assistance – Save Invitation page, enter your name in the **From (the name you would like to appear on the invitation)** text box.
6. In the dropdown list within the **Set the invitation to expire** section, set the time that you want the invitation to be valid, and click **Continue.** Your assistant must connect to the ProLiant DL320 Firewall/VPN/Cache server within this period.
7. Confirm that **Require the recipient to use a password** is selected.
8. Enter a password that the assistant will use to access the ProLiant DL320 Firewall/VPN/Cache server in the **Type password** text box, confirm the password in the **Confirm password** text box, and click **Save Invitation.**
9. Record the location where the invitation file is saved in the **Save in** list box at the top of the **Save As** dialog box.
10. Enter a name for the invitation file in the **File name** text box, and click **Save.** The Remote Assistance page shows the location of the saved file.
11. Copy this file to a computer on the LAN, and send the file to your assistant.

NOTE: HP strongly recommends not using an e-mail client application on the ProLiant DL320 Firewall/VPN/Cache server itself.

Configuring Monitoring, Reporting, and Logging

The ProLiant DL320 Firewall/VPN/Cache server has a comprehensive logging and reporting facility. Some logging and reporting options should be configured immediately to get the most from the ProLiant DL320 Firewall/VPN/Cache server logging and reporting feature set. These options include:

- Configure firewall logging
- Configure Web proxy logging

Configuring Firewall Logging

The firewall log records connections from Secure NAT and firewall clients on the internal network and external network. Firewall logging can be configured to use one of several storage methods. Each storage method has its own advantages and disadvantages. Firewall logging storage methods include:

- File logging
- SQL database logging
- MSDE database logging

To configure the Microsoft firewall service basic logging properties:

1. In the scope pane of the ISA Server 2004 management console, expand your server name, and then click the **Monitoring** node.
2. In the details pane, click the **Logging** tab.
3. In the task pane, click the **Tasks** tab, and then click **Configure Firewall Logging.** The Log tab appears in the Firewall Logging Properties dialog box.
4. Select the Log storage format that best fits. The File format option is best when copying a log file information to a third-party application on another computer. The SQL database format option is best when there is an SQL database on the internal network and you have the expertise to manage an SQL database. The MSDE database format option is an excellent option when SQL text-based logging is not used.

5. Select the **File** format option. From the Format list, select the **ISA Server file format.** This format will save log file entries using the local time configured on the ProLiant DL320 Firewall/VPN/Cache server to stamp the log entries.

   NOTE: When using file-based logging, the log file in real time will not be able to perform queries.

6. Click **Apply>OK.**
7. Click **Apply** at the top of the details pane to save the changes and update the firewall policy.

Configuring Web Proxy Logging

The Web Proxy logs contain information about connections from Web Proxy clients. Web Proxy logging can be configured to use many different storage methods. Each storage method has its own advantages and disadvantages. Web Proxy storage methods include:

- File logging
- SQL database logging
- MSDE database logging

To configure the Web Proxy logging properties:

1. In the scope pane of the ISA Server 2004 management console, expand your server name, and then click the **Monitoring** node.
2. In the details pane, click the **Logging** tab.
3. In the task pane, click the **Tasks** tab, and then click **Configure Web Proxy Logging.** The Log tab appears in the Web Proxy Properties dialog box.
4. Select the Log storage format that best meets your needs. The File format option is best when copying log file information to a third-party application on another computer on the internal network. The SQL database format option is best when a SQL database exists on the internal network and you have the expertise to manage a SQL database. The MDSE database format option is an excellent option when do not want to use SQL or text-based logging.

5. Select the **File** format option. From the Format list, select the **ISA Server file format.** This format will save log file entries using the local time configured on the ProLiant DL320 Firewall/VPN/Cache server to stamp the log entries.

   NOTE: When using file-based logging, the log file will not be able to perform queries in real time.

6. Click **Apply>OK.**
7. Click **Apply** at the top of the details pane to save the changes and update firewall policy.

Setting Up the Client Installation Share

The Client Installation Share contains the firewall client installation files. The firewall client software can be installed on network client systems by having the clients connect to the Client Installation Share located on the ProLiant DL320 Firewall/VPN/Cache server or another internal network computer.

In the current ProLiant DL320 Firewall/VPN/Cache server release, the Client Installation Share is installed on the ProLiant DL320 Firewall/VPN/Cache server. However, network clients will not be able to access the installation files because the Server service is disabled. The Server service must be manually enabled before network client computers can connect to the share. However, enabling the Server service on the firewall is not recommended.

Another option is to use the Companion CD and install the Client Installation Share on a secure file server on the LAN. You can install the Client Installation Share on a computer other than the ProLiant DL320 Firewall/VPN/Cache server by inserting the Companion CD into the server's CD-ROM drive and selecting the Install Client Installation Share option from the Autorun menu.

Supporting Web Proxy and Firewall Client Automatic Discovery

The firewall and Web proxy client computers can be configured to automatically obtain configuration information from the ProLiant DL320 Firewall/VPN/Cache server. Automatic discovery enables the Web proxy and firewall client computers on the LAN to automatically discover the location of the ProLiant DL320 Firewall/VPN/Cache server and obtain configuration information. The entire process is transparent to users, and it allows mobile users to move to and from the LAN and automatically obtain connection and configuration information required to connect to the Internet through the ProLiant DL320 Firewall/VPN/Cache server.

There are two methods that support the Web proxy and firewall client automatic discovery mechanism:

- DNS WPAD entry
- DHCP Option 252

DNS WPAD Entry

A WPAD alias entry is placed on the DNS server on your LAN. The entry maps the name WPAD to the DNS host (A) record for the internal interface of the ProLiant DL320 Firewall/VPN/Cache server. Requirements for the DNS WPAD alias entry include:

- A DNS server on the LAN
- A host (A) entry for the internal interface of the ProLiant DL320 Firewall/VPN/Cache server
- An alias (CNAME) record for the name WPAD that maps to the host (A) record for the entry in DNS of the ProLiant DL320 Firewall/VPN/Cache server
- Computers on the LAN that can correctly qualify the unqualified name WPAD (the best way to meet this requirement is to join the LAN computers to the same domain as the WPAD entry)

To create the DNS WPAD entry if Windows DNS server already exist on the LAN:

1. On the DNS server, from the Administrative Tools menu, open the DNS console.
2. In the left pane of the DNS management console, expand the server name, expand the **Forward Lookup Zones** node, and click the domain name.
3. Right-click the domain name, and click the **New Alias (CNAME)** command.
4. In the Alias name (uses parent domain if left blank) text box, enter the name `wpad`, and click **Browse.**
5. In the Browse dialog box, double-click the server name in the Records list, the **Forward Lookup Zones** entry in the Records list, and then the domain name in the Records list.
6. Select the resource record for the ProLiant DL320 Firewall/VPN/Cache server in the Records list, and then click **OK.** The name of the ProLiant DL320 Firewall/VPN/Cache server now appears in the Fully qualified domain name (FQDN) for target host text box.
7. Click **OK.** The WPAD alias entry now appears in the resource record list in the results pane of the DNS console.

DHCP Option 252

Use the DHCP option 252 WPAD method for computers using DHCP to obtain IP addressing information. Requirements for this option include:

- A DHCP server on the LAN
- Computers on the LAN use DHCP to obtain IP addressing information
- Web Proxy client users logged on as local administrators or members of the Power Users group

If a DHCP server exist on your LAN:

1. From the Administrative Tools menu on the DHCP computer on the LAN, open the DHCP console.
2. In the scope pane of the DHCP console, right-click the server name, and click **Set Predefined Options.**
3. In the Predefined Options and Values dialog box, click the **Add** button.
4. In the Option Type dialog box in the Name text box, enter `WPAD`.
5. Select **String** in the Data type list, enter `252` in the Code text box, and enter `DHCP wpad entry` in the Description text box.
6. In the Predefined Options and Values text box, enter the following information in the String text box:

   ```
   http://<computer_name>:<AutoDiscoveryPortNumber>/Wpad.dat
   ```

   where c*omputer_name* is the DNS name (FQDN) of the ProLiant DL320 Firewall/VPN/Cache server and *AutoDiscovveryPortNumber* is the port number that the ProLiant DL320 Firewall/VPN/Cache server uses to publish automatic discovery information (this is TCP port 80 by default).

   For example, if the computer name is firewall.domain.com, the string would be:

   ```
   http://firewall.domain.com/wpad.dat
   ```

7. In the Predefined Options and Values dialog box, click **OK.**

NOTE: To perform DHCP automatic discovery, you must be logged on as an administrator or Power User in Windows 2000 or as an administrator, Power User, or member of the Network Configuration Operators group in Windows XP. For more information, refer to the article “Automatic Proxy Discovery in Internet Explorer with DHCP Requires Specific Permissions” at http://go.microsoft.com/fwlink/?LinkID=27334.

Configuring Time Synchronization

Use the firewall as a time server for the LAN. A time server is a computer that provides accurate time to other computers on the LAN. This server increases security on the network by providing accurate time to all hosts on the network so that auditing and logging entries have the correct time. In addition, many network protocols require accurate time to function properly.

To obtain the most accurate time possible, the ProLiant DL320 Firewall/VPN/Cache server must access a time server on the Internet. If you choose not to have the ProLiant DL320 Firewall/VPN/Cache server as a time server for the LAN, configure the ProLiant DL320 Firewall/VPN/Cache server to allow computers on the LAN to contact their own Internet time servers.

For example, if a Windows domain exists on the internal network, configure the primary domain controller (PDC) emulator to use the ProLiant DL320 Firewall/VPN/Cache server as its time server. If a Windows domain does not exist, configure the individual clients to synchronize with the ProLiant DL320 Firewall/VPN/Cache server time server.

Create an access policy enabling both the ProLiant DL320 Firewall/VPN/Cache server and the computers on the LAN to contact Internet time servers.

To create this access policy:

1. In the scope pane of the ISA Server 2004 management console, expand the server name, right-click the **Firewall Policy** node, and select **New>Access Rule.**
2. On the Welcome to the New Access Rule Wizard page, enter the name for the rule in the Access rule name text box. In this example, enter `Network Time requested by Local Host and Internal`, and click **Next.**
3. On the Rule Action page, select **Allow,** and click **Next.**
4. On the Protocols page in the This rule applies to list, select **Selected protocols,** and click **Add.**
5. In the Add Protocols text box, select the **Infrastructure** folder, double-click the **NTP (UDP)** entry, and then click **Close.**
6. On the Protocols page, click **Next.**

7. On the Access Rule Sources page, click **Add.**
8. In the Add Network Entities dialog box, select **Networks.**
9. Double-click **Local Host>Internal**, and then click **Close.**
10. On the Access Rule Sources page, click **Next.**
11. On the Access Rule Destinations page, click **Add**.
12. Select the **Networks** folder, double-click the external entry, and then click **Close.**
13. On the Access Rule Destinations page, click **Next.**
14. On the User Sets page, click **Next.**
15. On the Completing the New Access Rule Wizard page, click **Finish.**

The ProLiant DL320 Firewall/VPN/Cache server can now perform time synchronization with Internet-based time servers. If the internal network clients are to synchronize with the ProLiant DL320 Firewall/VPN/Cache server, create an access rule allowing the internal network access to the local host network using the Network Time Protocol. In addition, configure the clients to use the correct time server. In Windows XP, the time server configuration is performed in the Date and Time properties dialog box on the Internet Time tab.

Remote Access VPN

A Remote Access VPN allows computers located virtually anywhere in the world to connect to computers in the internal network through the ProLiant DL320 Firewall/VPN/Cache server using a VPN connection. The only requirement is that the client computer has an Internet connection. The ProLiant DL320 Firewall/VPN/Cache server can be managed from home or any other location by creating a VPN connection to the ProLiant DL320 Firewall/VPN/Cache server. In addition, other computers can be accessed on the internal network protected by the ProLiant DL320 Firewall/VPN/Cache server. For comprehensive documentation on how to create and configure site-to-site VPN connections, refer to the ProLiant DL320 Firewall/VPN/Cache server Help file and the Microsoft ISA Server 2004 website at http://go.microsoft.com/fwlink/?LinkID=27332.

Disaster Recovery and Change Management

There are many tasks to be performed that address disaster recovery and change management issues. These tasks include:

- ProLiant DL320 Firewall/VPN/Cache server settings backup and restore
- System backup and restore
- Back to factory settings
- Scheduled backups

ProLiant DL320 Firewall/VPN/Cache Server Settings Backup and Restore

Firewall change management can be accomplished by backing up the ProLiant DL320 Firewall/VPN/Cache server configuration settings before making changes. The backed-up settings can be restored in the event subsequent changes made to the firewall configuration have unexpected or undesirable results. The ProLiant DL320 Firewall/VPN/Cache server has an integrated backup feature that saves almost all of the configuration settings.

To back up the ProLiant DL320 Firewall/VPN/Cache server configuration:

1. In the scope pane of the ISA Server 2004 management console, right-click the server name, and then click **Back Up.**
2. In the Backup Configuration dialog box, select a location for the backup file in the **Save in** list, enter a name for the backup file in the **File name** text box, and then click **Backup.**
3. In the Set Password dialog box, enter a password in the Password text box, confirm the password in the Confirm password text box, and click **OK.**
4. In the Exporting dialog box, when the array data has been successfully backed up, click **OK,** and copy the file to a safe location separate from the ProLiant DL320 Firewall/VPN/Cache server.

To restore the ProLiant DL320 Firewall/VPN/Cache server to the settings contained in the backup file:

1. In the scope pane of the ISA Server 2004 management console, right-click the server name, and then click **Restore.**
2. In the Restore Configuration dialog box, locate the backup file, and click **Restore.**
3. In the Open the Imported File dialog box, enter the password that was assigned to the file, and click **OK.**
4. In the Importing dialog box, after the array data has been successfully restored, click **OK.**
5. Click **Apply** to save the changes and update the firewall policy to the settings contained in the backup file.
6. In the ISA Server warning dialog box, select **Save the changes and restart the service(s),** and click **OK.**

System Backup and Restore

It is a good security policy to back up the entire contents of the ProLiant DL320 Firewall/VPN/Cache server hard disk, including the ProLiant DL320 Firewall/VPN/Cache server software and underlying operating system. You can use the Windows Backup utility to accomplish this task.

To back up the contents of the ProLiant DL320 Firewall/VPN/Cache server hard disk:

1. Select **Start>Run.**
2. In the Open text box, enter `ntbackup`, and click **OK.**
3. Confirm that the **Always start in wizard mode** checkbox is selected, and click **Next.**
4. On the Backup or Restore page, select the **Back up files and settings** option, and click **Next.**
5. On the **What to Back Up** page, select the **All information on this computer** option, and click **Next.**

6. On the Backup Type, Destination, and Name page, click the **Browse** button to select a location to save the backup file. The file is copied to a management station on the LAN and to removable media, such as a CD.
7. In the Save As dialog box, select the backup destination, and click **Save.**
8. In the Type a name for this backup text box, enter a name, and click **Next.**
9. On the Completing the Backup or Restore Wizard page, review the information. Have a floppy disk ready that you can use to restore the system in the event of a major failure. Click **Finish.**
10. Follow the prompts to complete the system backup procedure.

Back to Factory Settings

The Back to Factory Settings option allows the ProLiant DL320 Firewall/VPN/Cache server to be returned to the original out-of-box factory settings. To return the computer to its original factory settings:

1. Place the first Recovery CD into the ProLiant DL320 Firewall/VPN/Cache server CD-ROM drive, and reboot the ProLiant DL320 Firewall/VPN/Cache server.
2. Follow the prompts generated by the ProLiant DL320 Firewall/VPN/Cache server system restoration routine. In approximately eight to ten minutes, the computer is restored to its factory settings and can be configured to connect to the Internet.

IMPORTANT: A warning will be sent, stating that all data on the ProLiant DL320 Firewall/VPN/Cache server will be lost. Confirm continuation of the restore procedure after receiving this warning. After completing the Back to Factory Settings routine, restore system settings and firewall settings from previously created backups.

Scheduled Backups

An operating system backup can be scheduled to take place automatically on a predetermined time and date. To configure a recurring backup routine:

1. Select **Start>Run.**
2. In the Open text box, enter `ntbackup`, and click **OK.**
3. Confirm that the **Always start in wizard mode** checkbox is selected.

NOTE: The Backup or Restore Wizard starts by default, unless it is disabled.

4. On the Welcome to the Backup or Restore Wizard page, click **Advanced Mode.**
5. Click the **Backup** tab, and select **Job>New.**
6. Select the files and folders to back up by selecting the checkbox to the left of a file or folder.
7. In Backup destination, select **File** or **Tape device.**
8. In Backup media or file name, enter a path and file name for the backup file, or select a tape.
9. Select the desired backup options, such as the backup type and the log file type:
   a. Select **Tools>Options.**
   b. In the Options dialog box, select the desired options, and then click **OK.**
10. On the Job menu, select **Save Selections** to save your selections as a backup job file (.bks).
11. Click **Start Backup,** and make any desired changes in the **Backup Job Information** dialog box.
12. To set advanced backup options, such as data verification or hardware compression, click **Advanced.**
13. Select advanced backup options, and then click **OK.**
14. In the Backup Job Information dialog box, click **Schedule.**
15. In the Set Account Information dialog box, enter the appropriate user name and password.

16. In the Scheduled Job Options dialog box in Job name, enter a name for the scheduled backup job.
17. On the Schedule data tab, click **Properties** to set the date, time, and frequency parameters for the scheduled backup, and then click **OK>OK.**

ProLiant DL320 Firewall/VPN/Cache Server Network Services Support

Two network services provide important infrastructure support for the ProLiant DL320 Firewall/VPN/Cache server and network hosts that make connections through the ProLiant DL320 Firewall/VPN/Cache server. These network services are:

- The DNS server service
- The DHCP server service

DNS Server

The ProLiant DL320 Firewall/VPN/Cache server depends on a DNS server to resolve Internet host names. To provide DNS server support for the ProLiant DL320 Firewall/VPN/Cache server, use:

- Your ISP DNS server
- Your own DNS server on the internal network
- A caching-only DNS server on the ProLiant DL320 Firewall/VPN/Cache server
- A caching-only DNS server on a perimeter network segment

The simplest approach is to use your ISP DNS server. During the ProLiant DL320 Firewall/VPN/Cache server setup process, set the DNS server address used by the ProLiant DL320 Firewall/VPN/Cache server to use the IP address of the ISP DNS server to resolve Internet host names. If using a dial-up connection to connect to the Internet, your ISP will automatically assign both an IP address and a DNS server address to your dial-up interface. The drawback of using only the ISP DNS server is that DNS cannot be used to resolve computer names on the internal network.

If a DNS server already exists on the internal network, use it to resolve Internet host names. All Active Directory domains require at least one DNS server and use that DNS server to resolve Internet host names for your internal network clients. Configure the internal interface of the ProLiant DL320 Firewall/VPN/Cache server to use this DNS server after configuring the internal network DNS server to resolve Internet names.

A caching-only DNS server does not contain DNS zone or domain information. Instead, it queries other DNS servers on the Internet for the IP address of a given host, and then caches the result before forwarding the answer to the computer requesting the name resolution. A caching-only DNS server can be installed on the ProLiant DL320 Firewall/VPN/Cache server, and then the ProLiant DL320 Firewall/VPN/Cache server can be configured to use itself as its DNS server.

Another caching-only DNS server solution takes advantage of a perimeter network configuration. If the ProLiant DL320 Firewall/VPN/Cache server has three or more network interfaces, one of the network interfaces can be connected to a perimeter network. A caching-only DNS server can be installed and configured on the perimeter network. If a DNS server exists on the internal network, it can be configured to use the perimeter network DNS server as a forwarder.

For more information on DNS setup and configuration, refer to the Windows Server 2003 Help and Support Center or the Windows 2000 Help.

DHCP Server

A DHCP server assigns IP addresses to computers configured as DHCP clients. In a typical ProLiant DL320 Firewall/VPN/Cache server configuration, the DHCP server assigns addresses to computers on the internal network and the VPN Clients network. The DHCP server itself can be located on:

- The ProLiant DL320 Firewall/VPN/Cache server
- A computer on the internal network

The DHCP server can be installed on the ProLiant DL320 Firewall/VPN/Cache server computer if there are no other server computers on the internal network where a DHCP server can be installed. Installing the DHCP server on the ProLiant DL320 Firewall/VPN/Cache server is a second choice because VPN clients cannot obtain an IP address from the DHCP server on the ProLiant DL320 Firewall/VPN/Cache server itself. Configure a static address pool of IP addresses to assign to VPN clients when the DHCP server is installed on the ProLiant DL320 Firewall/VPN/Cache server. Another reason to keep the DHCP server off the firewall is to reduce the number of applications running on the firewall, all of which create potential portals for attack.

Placing the DHCP server on a computer located on the internal network enables the VPN clients to obtain IP addressing information from the DHCP server. In addition, the ProLiant DL320 Firewall/VPN/Cache server can automatically define the VPN clients network based on the IP addresses it obtains from the DHCP server. Another advantage is that the DHCP Relay Agent routing service can optionally be installed on the ProLiant DL320 Firewall/VPN/Cache server and DHCP options can be assigned to the VPN clients network, such as a primary domain name.

Hardening Overview and Impact

The ProLiant DL320 Firewall/VPN/Cache server must be able to act in several specific roles and perform 11 specific server tasks. A set of firewall and operating system services are enabled to support the roles and tasks of the ProLiant DL320 Firewall/VPN/Cache server.

The ProLiant DL320 Firewall/VPN/Cache server was preinstalled to support the following roles. Consequently, services were set to the proper startup mode. The ProLiant DL320 Firewall/VPN/Cache server administrator can revise the preinstalled choices at any time.

- Automatic Update client
- DHCP client
- DNS client
- Dynamic DNS registration
- Microsoft Networking client
- WINS client

The ProLiant DL320 Firewall/VPN/Cache server can be joined to a domain and accordingly require the Domain Member client role. However, this configuration is not the default. The ProLiant DL320 Firewall/VPN/Cache server requires 11 server tasks.

- Application installation locally using Windows Installer (MSI)
- Backup
- Error reporting
- Help and support
- ISA Server 2004: Client Installation Share
- ISA Server 2004: MSDE logging
- Performance Monitor background collect
- Print to a local printer

- Print to a remote computer
- Remote assistant
- Time synchronization

Startup mode shows the start-up type for the following services:

- Automatic—Specifies that the service starts automatically when the system starts.
- Manual—Specifies that this service might be required by a dependent service that can start it. Services with Manual startup do not start automatically when the system starts.
- Disabled—Prevents the service from being started by the system, a user, or any dependent service. Any services that explicitly depend on it will fail to start.

To change the start-up type for a service:

NOTE: Disabling or turning off services that are on by default might adversely affect the functionality and performance of the server.

1. Right-click **My Computer,** and select **Manage.**
2. Click **Services and Applications>Services.**
3. Right-click the service to modify, and select **Properties.**
4. In the **Startup type** field, select either **Automatic, Manual,** or **Disabled.**
5. Click **OK.**

Table 1 lists the services required for the ProLiant DL320 Firewall/VPN/Cache server to take on its specified roles and required server tasks, as well as other services that are available but not automatically started.

Table 1: ProLiant DL320 Firewall/VPN/Cache Server Services

Service name	Service short name	Startup mode
Automatic Updates	wuauserv	Automatic
Cryptographic Services	CryptSvc	Automatic
DHCP Client	Dhcp	Automatic
DNS Client	Dnscache	Automatic
Error Reporting Service	ERSvc	Automatic
Event Log	Eventlog	Automatic
Help and Support	Helpsvc	Automatic
IPSEC Services	PolicyAgent	Automatic
Logical Disk Manager	dmserver	Automatic
Microsoft Firewall	Fwsrv	Automatic
Microsoft ISA Server Control	ISACtrl	Automatic
Microsoft ISA Server Job Scheduler	ISASched	Automatic
Microsoft ISA Server Storage	ISASTG	Automatic
MSSQL$MSFW	MSSQL$MSFW	Automatic
Performance Logs and Alerts	SysmonLog	Automatic
Plug and Play	PlugPlay	Automatic

continued

Table 1: ProLiant DL320 Firewall/VPN/Cache Server Services *continued*

Service name	Service short name	Startup mode
Protected Storage	ProtectedStorage	Automatic
Remote Procedure Call (RPC)	RpcSs	Automatic
Secondary Logon	seclogon	Automatic
Security Accounts Manager	SamSs	Automatic
System Event Notification	SENS	Automatic
Windows Management Instrumentation	winmgmt	Automatic
Windows Time	W32time	Automatic
Wireless Configuration	WZCSVC	Automatic
Workstation	lanmanworkstation	Automatic
Background Intelligent Transfer Service	BITS	Manual
COM+ Event System	EventSystem	Manual
Logical Disk Manager Administrative Service	dmadmin	Manual
Network Connections	Netman	Manual
Network Location Awareness (NLA)	NLA	Manual
NTLM Security Support Provider	NtLmSsp	Manual
Remote Access Connection Manager	RasMan	Manual
Remote Desktop Help Session Manager	RDSessMgr	Manual

continued

Table 1: ProLiant DL320 Firewall/VPN/Cache Server Services *continued*

Service name	Service short name	Startup mode
Server	lanmanserver	Manual
Smart Card	ScardSvr	Manual
Telephony	TapiSrv	Manual
Terminal Services	TermService	Manual
Virtual Disk Service (VDS)	VDS	Manual
Volume Shadow Copy	VSS	Manual
Windows Installer	MSIServer	Manual
WMI Performance Adapter	WmiApSrv	Manual
Alerter	Alerter	Disabled
Application Layer Gateway Service	ALG	Disabled
Application Management	AppMgmt	Disabled
ClipBook	ClipSrv	Disabled
Computer Browser	Browser	Disabled
COM+ System Application	COMSysApp	Disabled
Distributed File System	Dfs	Disabled
Distributed Link Tracking Client	TrkWks	Disabled
Distributed Link Tracking Server	TrkSvr	Disabled
Distributed Transaction Coordinator	MSDTC	Disabled

continued

Table 1: **ProLiant DL320 Firewall/VPN/Cache Server Services** *continued*

Service name	**Service short name**	**Startup mode**
File Replication	NtFrs	Disabled
HTTP SSL	HTTPFilter	Disabled
Human Interface Device Access	HidServ	Disabled
IMAPI CD-Burning COM Service	ImapiService	Disabled
Indexing Service	CiSvc	Disabled
Internet Connection Firewall (ICF)/Internet Connection	SharedAccess/ Sharing (ICS)	Disabled
Intersite Messaging	IsmServ	Disabled
Kerberos Key Distribution Center	Kdc	Disabled
License Logging	LicenseService	Disabled
Messenger	Messenger	Disabled
Microsoft Software Shadow Copy Provider	SWPRV	Disabled
Network Basic Input/Output System	NETBIOS	Disabled
Net Logon*	Netlogon	Disabled
NetMeeting Remote Desktop Sharing	Mnmsrvc	Disabled
Network DDE	NetDDE	Disabled
Network DDE DSDM	NetDDEdsdm	Disabled
Portable Media Serial Number Service	WmdmPmSN	Disabled
Print Spooler	Spooler	Disabled
Remote Access Auto Connection Manager	RasAuto	Disabled

continued

Table 1: ProLiant DL320 Firewall/VPN/Cache Server Services *continued*

Service name	Service short name	Startup mode
Remote Procedure Call (RPC) Locator	RpcLocator	Disabled
Remote Registry	RemoteRegistry	Disabled
Resultant Set of Policy Provider	RSoPProv	Disabled
Routing and Remote Access	RemoteAccess	Disabled
Shell Hardware Detection	ShellHWDetection	Disabled
Special Administration Console Helper	sacsvr	Disabled
Task Scheduler	Schedule	Disabled
Telnet	TlntSvr	Disabled
Terminal Services Session Directory	Tssdis	Disabled
Themes	Themes	Disabled
Transmission Control Protocol/Internet Protocol	TCP/IP	Disabled
Upload Manager	uploadmgr	Disabled
Uninterruptible Power Supply	UPS	Disabled
WebClient	WebClient	Disabled
Windows Audio	AudioSrv	Disabled
Windows Image Acquisition (WIA)	stisvc	Disabled
Windows Management Instrumentation Driver Extensions	Wmi	Disabled
WinHTTP Web Proxy Auto-Discovery Service	WinHttpAutoProxySvc	Disabled

This guide addressed several important issues that can help in getting the ProLiant DL320 Firewall/VPN/Cache server running smoothly and reliably. For detailed information about how to configure the firewall to meet the specific requirements of your organization, refer to the ProLiant DL320 Firewall/VPN/Cache server Help files.

HP Customer Support

HP Customer Support offers Software Support, Support Plus Software Support, and Integrated Hardware and Software Support services for ISA preinstalled on the ProLiant DL320 G3 server. The following are selected recommendations with links to further detail:

- Software Phone Support—Includes three incidents and 9 x 5 standard telephone support for ISA 2004 and a wide range of Microsoft applications. For more information, refer to http://www.hp.com/hps/software.
- Hardware Support—A range of hardware support services are available for the Proliant DL320 G3. For more information refer to http://www.hp.com/hps/hardware.
- Support Plus—Includes one year of integrated hardware and software support on the Proliant DL320 G3 server. For more information, refer to http://www.hp.com/hps/premium.
- Warranty Support—For Proliant servers, 90 days of technical advisory support, including installation assistance, is available for HP preinstalled third-party software from the HP website or by telephone from the date of purchase.

To contact HP for support, go to http://www.hp.com.